August 1, 2014

Dairy Water Quality Inspection Report

Dairy Name:	Arrowhead Ranches
Physical Address:	2915 Pepper Road, Petaluma, CA 94952
Waste Discharger ID	1B11106DSON
Inspection Date:	April 14, 2014 at 12:00 P.M.
Inspection Attendance:	Cherie Blatt, Regional Water Board Bill Bianchi, Dairy Operator Melissa Lema, Western United Dairymen Glenn Sakamoto, Environmental Protection Agency (USEPA) Becky Mitschele, USEPA
Dairy Type:	Conventional milking operation (past owner 2012-2013)
Cow Breed:	none currently, Bianchi purchased dairy in late 2013
Cow Numbers:	none yet under new owner
Permitted Maximum Milking + Dry:	500
Permitted Maximum Other Dairy Cattle:	200
Acres Owned:	920 acres (ref: 2012 WQP)
Acres that receive manure and/or process water:	400 acres (ref: 2012 WQP)
Nutrient Management Plan:	previous owner had CNMP
Watersheds:	Stemple Creek

I. Introduction

On April 14, 2014, North Coast Regional Water Quality Control Board (Regional Water Board) staff conducted a routine inspection of Arrowhead Ranches. The purpose of this inspection was to review the dairy water quality practices for compliance with the Conditional Waiver of Waste Discharge Requirements for Existing Cow Dairies Order R1-2012-0003 (Waiver). Recommendations listed at the end of this report are offered to protect surface waters, groundwaters, and ensure compliance with the Waiver.

Timeline

April 19, 2012: The dairy submitted a Notice of Intent (NOI) to enroll in the Waiver. Dennis Maas, dairy operator and manager, submitted the NOI listing the owner as Alvin James Hansen Trust.

May 21, 2012: The dairy was enrolled under the Waiver.

December 10, 2012: The Regional Water Board received the dairy's Water Quality Plan as required by the Waiver. Cow numbers at that time were 335 milking + dry, and 165 other cattle.
November 5, 2013: Regional Water Board received an Annual Report from the dairy as required by the Waiver. The Annual Report lists Dennis Maas as operator/manager and the report is signed by Gayleen Maas. The report indicates group membership with the Sonoma-Marin Representative Dairy Surface Water Monitoring program. A note in the Annual Report states that individual groundwater monitoring results for Nitrate and Fecal coliform were not collected because the dairy was for sale.
Fall 2013 – Spring 2014: Regional Water Board received emails from the Bianchi's that they were buying Arrowhead Ranches. Regional Water Board staff explained Waiver Transfer of Ownership to the Bianchi's and to the Western United Dairymen staff (WUD). Upon making the appointment for this April 2014 inspection, the Bianchi's and WUD informed Regional Water Board staff that the Bianchi's had purchased Arrowhead Ranches. The Bianchi's are in the process of starting up the dairy. Just grazing was taking place in the fields at the time of the inspection. Cows were being milked next door at Bianchi's dairy but will sometime later be milked at Arrowhead.

II. Inspection Observations and File Review

On April 14, 2014, Regional Water Board staff inspected the production area of Arrowhead Ranches including the corrals, milk parlor, manure ponds, animal feeding/housing barn, feed storage buildings, rain gutter systems, stormwater discharge lines, fuel tanks, and some pastures near the production area. There were no cows in the production area per the note in the paragraph above.

Manure Management

The production area has four manure ponds. Capacities are listed in the Water Quality Plan as:

Main Pit	440,000 cubic feet
Secondary pond	207,900 cubic feet
Pond below the Barn #1	105,600 cubic feet
Pond below the Barn #2	380,160 cubic feet
Total manure pond capacity	1,133,660 cubic feet

Manure on the concrete areas in the production area is generally scraped to the Main Pit. The Secondary pond is located adjacent to the Main Pit and acts as extra capacity.

Pond #1 drains to Pond #2. These ponds collect liquid drainage from the corrals, milk barn wash water, and they catch some rainwater. Utilizing a big gun and an irrigation truck, this water is used to irrigate the pastures.

Manure pond liners meet State Title 27 standards of at least 10 percent clay and not more than 10 percent gravel according to dairy reports. Mr. Bianchi explained that the same contractor that built the George Bianchi dairy ponds next door also built the Arrowhead Ranches ponds. Mr. Bianchi knew that the ponds were designed to meet state requirements.

The dairy's Water Quality Plan indicates the following regarding the manure ponds:

-weed management is practiced at the manure ponds,
-manure solids removal is carried out by tractor PTO pump,
-solids removal completed with an excavator is overseen by management with historical facility knowledge,
-the ponds are checked for leaks. Repairs are made to prevent discharges to surface water or groundwater.
-sanitizers and cleaners for milk contact surfaces are used at low rates and are included in the waste water storage ponds,
-compounds not used in the production area are not disposed of in the lagoon,
-chemicals are used according to the manufacturer's label and directions and in accordance with federal, state, county, and local regulations.
-the use of disinfectants or other chemicals per label directions is allowed.

The Annual Report indicates that manure ponds have at least two feet of freeboard, the ponds are cleaned annually to maintain capacity, and the liner is checked. This report includes photos of the cleaned manure ponds as taken on October 21, 2013. It also states that the weeds are mowed on the pond berms to aid in checking for cracks, leaks, or other disturbance.

The Annual Report states that manure is removed from ponds, corrals, stomp pens, and any area where cows are maintained in order to minimize infiltration of manure-laden water into underlying soils. The Annual Report contains photos of cleaned and scraped stomp pens.

Regional Water Board staff observed extensive weed growth on the berms of the manure ponds thereby hindering inspection. **Recommendation 1:** Weeds growing on manure pond berms must be trimmed regularly to aid in checking the pond for leaks.

<u>Stormwater Runoff</u>

The dairy practices stormwater runoff control. Clean stormwater runoff is managed separate from manure and process water. Gutters separate stormwater from manured areas. Roofs are guttered away from manured areas. Heavy use areas in the production area have concrete floors and curbs. These areas are scraped to the Main Pit. Manure-contacted stormwater is also directed to the Main Pit. Manured areas are on concrete or compacted soils. Manure is removed from soil surfaces prior to the rainy season.

The dairy reports indicate that effective roof gutters divert rainwater away from manured areas, gutters are maintained, and clean water runoff is managed separate from manure and process water. In addition, berms and trenches divert run-on water from manured areas. Diversion ditches are functional and properly maintained to protect surface waters and help prevent manure runoff from entering watercourses.

Fields and Nutrient Budgeting

The dairy reports indicate that manure is applied to the fields to prevent runoff of nutrients. The amount of manure applied is based on previous experience, modified with new information, adjusted for crop performance and environmental impact, and is based on plant needs. Irrigation water is applied as uniformly and efficiently as possible. Bare soil areas within the production area are planted prior to the winter rains. The Annual Report states that in the past year, manure and process water generated was applied to pastures at rates agronomically sound for the crop, soil, climate, local situations, management system, and wastewater characteristics.

Mr. Bianchi said that manure solids are distributed on the pastures about once per year. Manure liquids are irrigated on each field utilizing a liquids tank and the big irrigation gun about once per year in the summer. Application to fields is rotated, however, not all fields receive this fertilizer each year.

The dairy practices rotational grazing and irrigation system management. Manure water is applied away from surface waters.

Erosion Control and Water Quality Protection

According to the Water Quality Plan checklist:

- the dairy restricts animal access to steep areas during vunerable periods,
-vegetative filter strips and grassed areas are located between the production area and surface waters,
-manured areas are scraped prior to the rainy season, and
-streams are protected by
    -fencing,
    -maintained livestock crossings to keep cattle out of surface waters,
    -berms,
    -storm water runoff control, and
    -the use of sedimentation ponds.

The Annual Report states that livestock crossings have been maintained on a regular basis through the years.

Machinery Oil: The oil on the machines is changed at George Bianchi, Inc. dairy next door and taken to a recycler.

III. Water Quality Monitoring

The Waiver Monitoring and Reporting Plan (MRP) requires rainy season sampling of surface water for Electrical Conductivity (EC), temperature, pH, and Ammonia. Surface water results are required to be submitted to the Regional Water Board each year. Group sampling is an option. The Fall 2013 Annual Report for Arrowhead Ranches indicates that the dairy is a member of the Sonoma-Marin Dairy Representative Monitoring program for the 2012-2013 rainy season surface water sampling. The Sonoma-Marin group results are reported to the Regional Water Board in an annual report.

The Waiver requires a total of four representative Fall and Spring groundwater samples to be collected for Nitrate and Fecal coliform. Results are to be submitted to the Regional Water Board with Annual Reports as required by the MRP. Arrowhead Ranches' Annual Report explains that the ranch is for sale and that groundwater sampling was not done. **Recommendation 2:** Beginning now, the dairy owner must collect four representative groundwater samples over two years, and submit the results to the Regional Water Board with future Annual Reports. An extension request form is attached for declaring the timing of sample collection.

Groundwater: There are several groundwater wells on the dairy. The dairy Water Quality Plan reports that manure is not applied at the wellhead and that the flow of contaminated runoff is diverted around the wellhead. Wells and septic systems are not shown on maps. **Recommendation 3:** The Water Quality Plan requires dairies to submit maps showing the location of wells and septic systems. Please add these items to the dairy maps and submit by November 30 with your 2014 Annual Report.

IV. Historical Ownership and Flooding

Arrowhead Ranches has been a dairy since 1967. Mr. Hansen owned the ranch most recently until his death a few years ago at which time the ranch had been put up for sale. The Bianchi's own a dairy next door to the south and negotiated a deal to buy Arrowhead Ranches from the Alvin Hansen Trust. During the inspection, Bill Bianchi said that he has been familiar with this dairy his whole life, has been dairying at Bianchi's dairy for 25 years, and has taken over operation of Arrowhead Ranches in Fall 2013. The Arrowhead Ranches' barns and pastures are utilized by dairy cows that are being milked next door at Bianchi's at the current time. Currently there are no cows being milked on Arrowhead Ranches until final decisions are made about the operation of this newly purchase dairy. In the meantime, the manure ponds are managed and the pastures are being fertilized and irrigated.

According to dairy reports, the manure ponds are well above the floodplain of Stemple Creek. There are no FEMA floodplain maps for the Arrowhead Ranches area. The enclosed topographic map of the area shows the ranch is approximately 110 feet above sea level.

The Water Quality Plan indicates that the manure ponds are protected from the 20-year stream flows and that the ponds are designed to hold the 25-year 24-hour storm event per

State Title 27 standards. The Water Quality Plan explains that the dairy complies with the retention of 25-year 24-hour storms as determined by historical experience. The Annual Report indicates that the dairy is designed to contain manure solids, runoff from solids storage areas, runoff from corrals that contain manure, milk barn wash water, waste milk, veterinary waste, and hazardous wastes such as pesticides used according to label directions. Design calculations are available for the manure storage system capacity.

The Annual Report states that the manure ponds have sufficient storage capacity prior to the rainy season as determined by historical experience. The submitted reports state that the dairy meets the 25-year 24-hour storm event by dairy design, pond sizing, cleaning pits by November 1 each year, and checking pond liners, banks, and berms. Secondary manure ponds are for emergency overflow and have never had to be used.

V. Fields and Nutrient Management Planning:

Arrowhead Ranches' Annual Report states that a Comprehensive Nutrient Management Plan (CNMP) was developed by the Natural Resources Conservation Service (NRCS). It is unclear what year the CNMP was developed. The NRCS recommends that CNMPs be updated every five years. Mr. Bianchi was unaware of details in the old CNMP.

The Water Quality Plan indicates that nutrients are applied based on plant needs and irrigation water is applied as uniformly and efficiently as possible. Also, the Water Quality Plan indicates that agronomic application of manure is based on previous experience and is adjusted for crop performance and environmental impact. Manure solids are applied rotationally about once per year, however, not all fields get fertilized each year. Manure liquids are applied in the summer with a traveling big gun or a liquids truck.
Recommendation 4: NMPs are not required under the Waiver, however, they are recommended because they demonstrate permit compliance such as with the Waiver prohibitions (Waiver page 11) and Waiver Attachment B: California Water Code Title 27. Regional Water Board recommends that Arrowhead Ranches representatives work with a technical service provider to develop and implement a NMP as discussed in the Waiver MRP and MRP-Appendix 2.

VI. Conclusion and Recommendations:

Soils and manure at Arrowhead Ranches were observed to be stabilized, erosion control is practiced, and the dairy does not appear to pose a threat to surface waters or groundwater. The below-listed recommendations are offered to protect surface waters, groundwaters, and ensure compliance with the Waiver.

1. Weed growth on the berm of Pond 1 was high and hinders inspection. Weeds growing on manure pond berms must be trimmed regularly to aid in checking the pond for leaks.
2. Beginning now, the dairy owner must collect four representative groundwater samples over two years, and submit the results to the Regional Water Board with

future Annual Reports. An extension request form is attached for declaring the timing of sample collection.

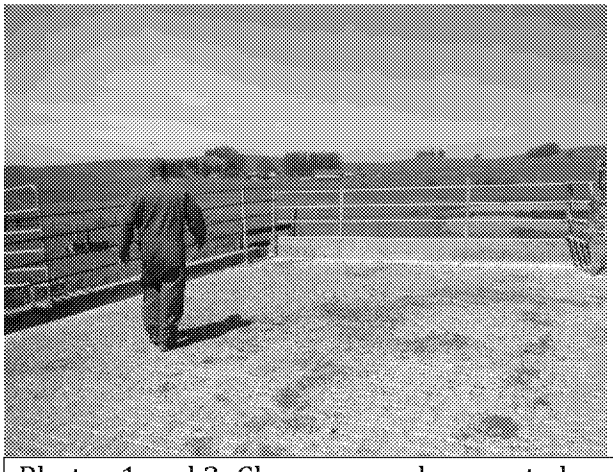
3. The Water Quality Plan requires dairies to submit maps showing the location of wells and septic systems. Please add these items to the dairy maps and submit by November 30 such as with your 2014 Annual Report.
4. NMPs are not required under the Waiver, however, they are recommended because they demonstrate permit compliance such as with the Waiver prohibitions (Waiver page 11) and Waiver Attachment B: California Water Code Title 27. Regional Water Board recommends that Collenberg Dairy representatives work with a technical service provider to develop and implement a NMP as discussed in the Waiver MRP and MRP-Appendix 2.

[FILENAME * MERGEFORMAT]

Enclosures- Dairy (2), Location, and Topographic Maps
Groundwater Sampling Extension Request Form

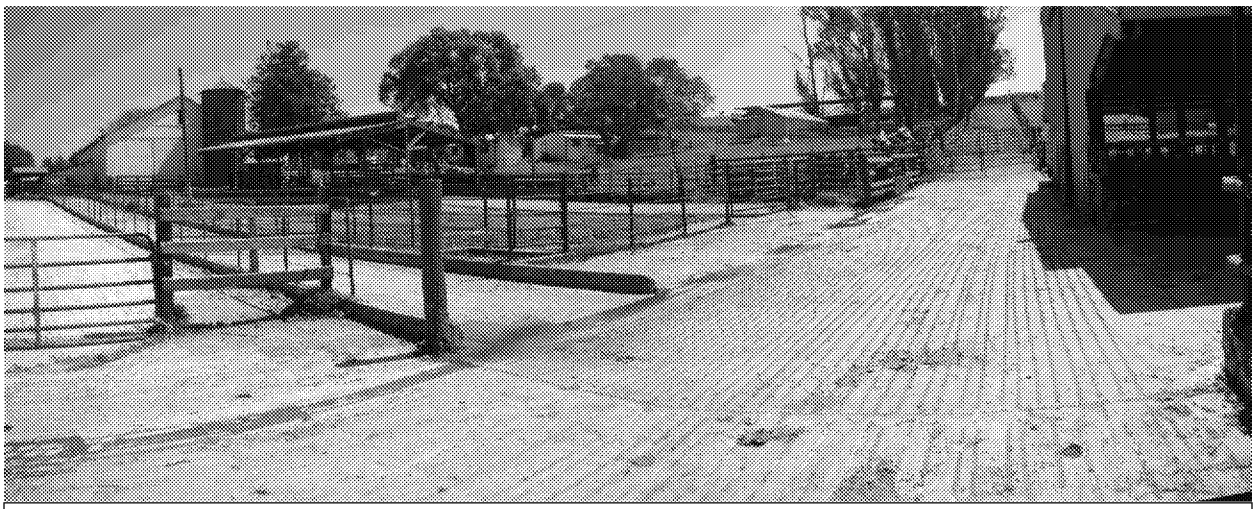
cc: Melissa Lema, Western United Dairymen [HYPERLINK "mailto:wud.mlema@yahoo.com"]

Photo Log - *April 14, 2014 by Cherie Blatt*



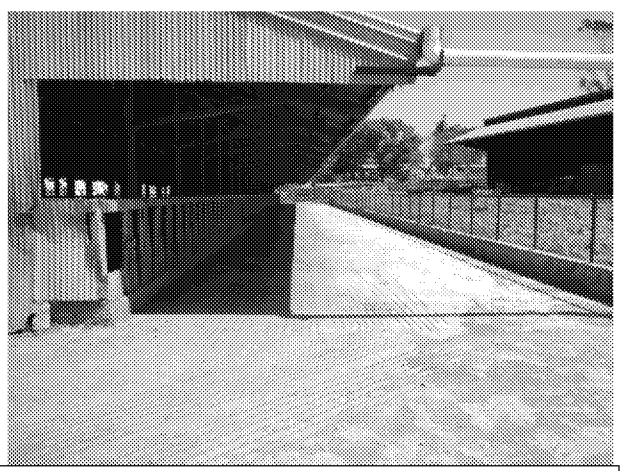

Photos 1 and 2: Clean scraped concrete lanes

Photos 3 and 4: Concrete lanes are scraped to Main Pit

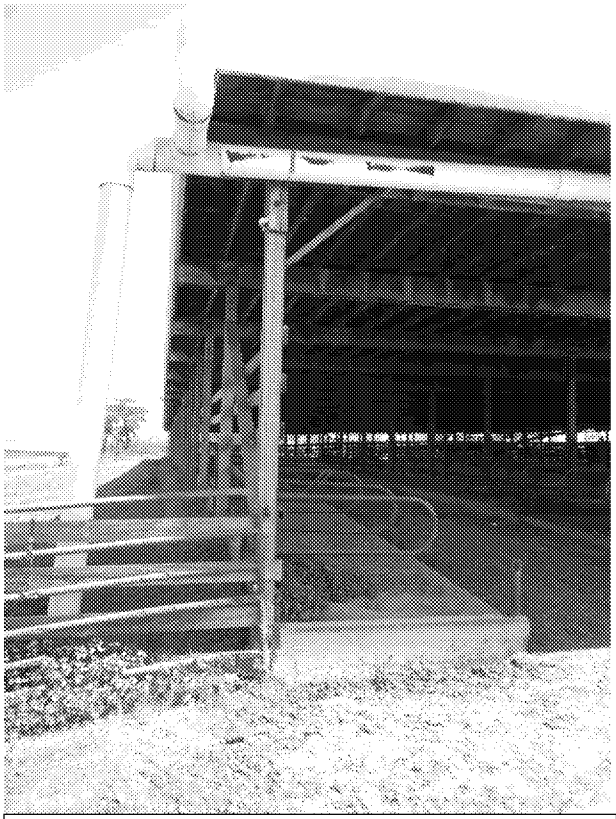


5. Concrete lanes are scraped to Main Pit

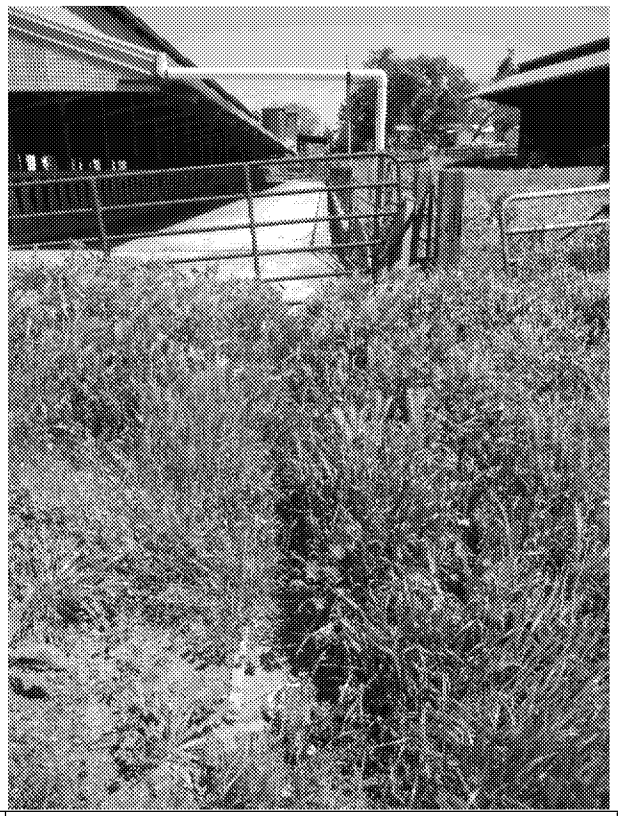
6. Manure on concrete lanes in Animal Feeding/Housing barn is scraped to Main Pit. Note concrete curbs for scraping



7. Gutters divert clean rainwater away from manured areas



8. Rain gutters on Animal Feeding/Housing barn



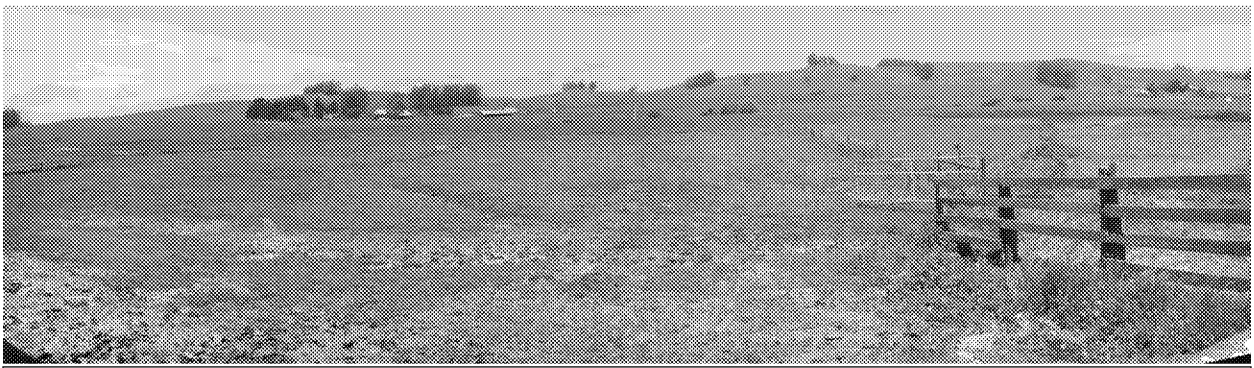
9. Rain gutters on Animal Feeding/Housing barn

10. Concrete lanes are scraped to Main Pit (left). Note rain gutters on Animal Feeding/Housing barn on right

11. Secondary manure pit west of Animal Feeding/Housing barn

12. Main (manure) Pit west of Animal Feeding/Housing barn

13. Manure ponds north of Milk Parlor



14. Pastures north of Animal Feeding/Housing and Milk Parlor

15. Storage area

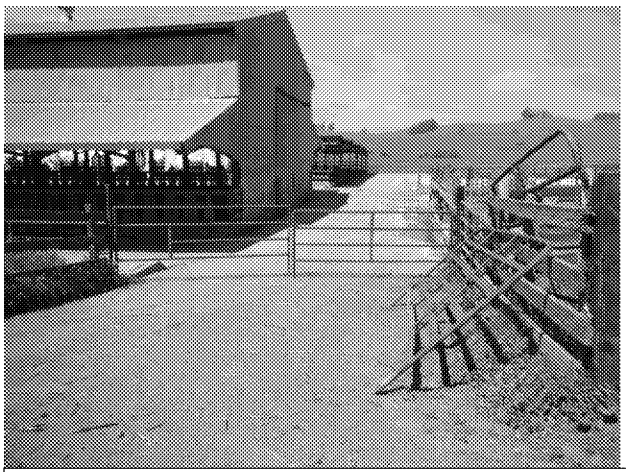
16. Cow lanes to pastures

17. Lanes to pastures

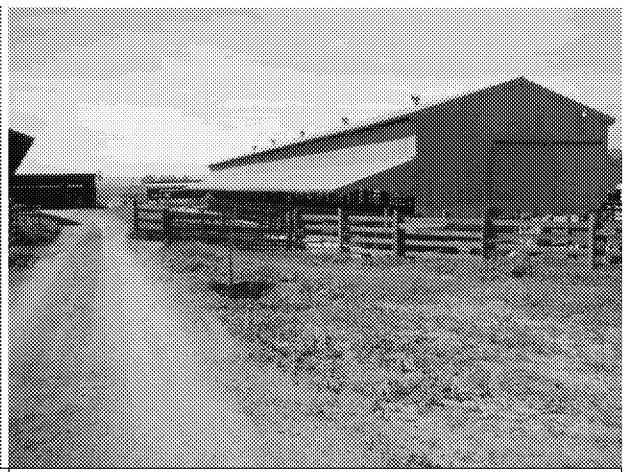
18. Manure solids from scraped areas in the Production Area are stored west of the Production Area. This manure is applied to the fields rotationally. This area drains to the manure pond.

19. Feed storage building

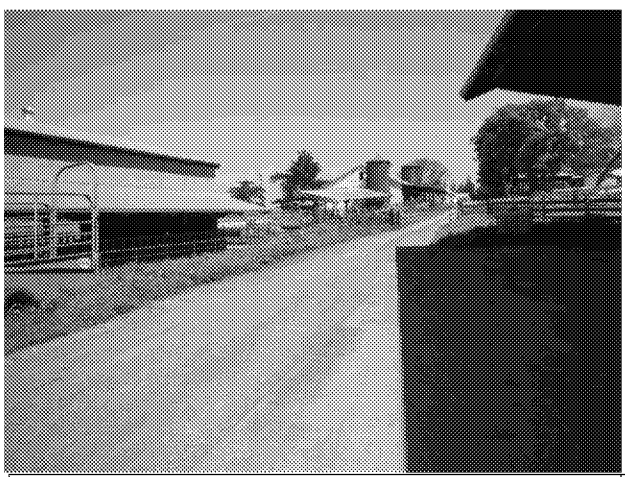
20. Feed storage building



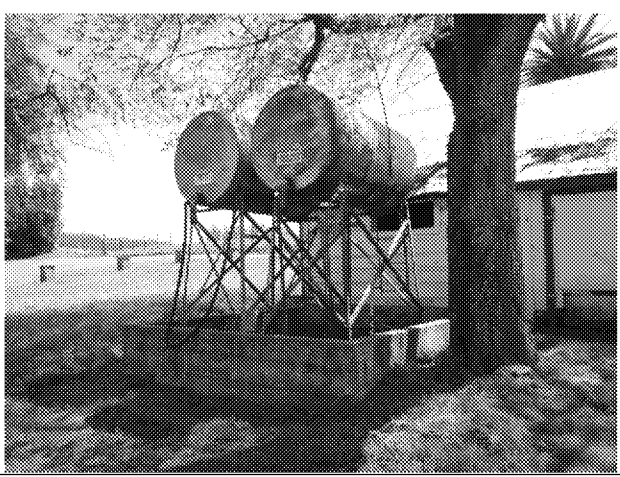
21. Animal Feeding/Housing Barn



22. Animal Feeding/Housing Barn



23. Production area lane looking east



24. Fuel storage tanks

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